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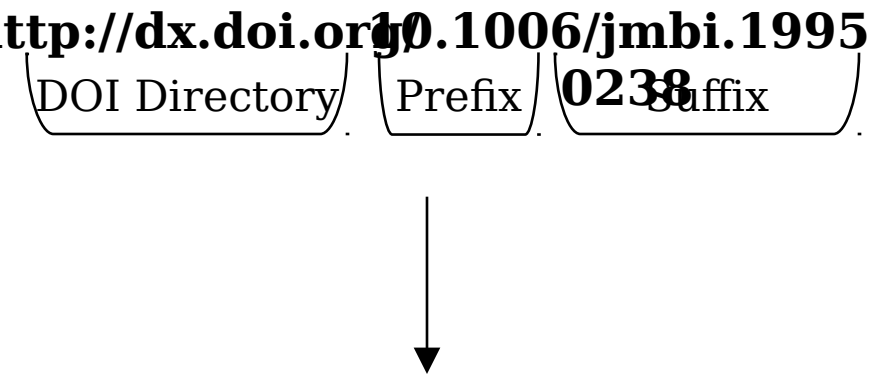

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Brief communication

Sister chromatid cohesion is required for postreplicative double-strand break repair in *Saccharomyces cerevisiae*

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Abstract

The repair of DNA double-strand breaks by recombination requires the presence of an undamaged copy that is used as a template during the repair process

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Proc. Natl. Acad. Sci. USA Vol. 94, pp. 14361-14366, December 1997

Biochemistry

The anaphase inhibitor of *Saccharomyces cerevisiae* Pds1p is a target of the DNA damage checkpoint pathway

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Communicated by Allan C. Spaulding, Carnegie Institution of Washington, Baltimore, MD, October 28, 1997 (received for review September 8, 1997)

Inhibition of DNA replication and physical DNA damage induce checkpoint responses that arrest cell cycle progression at two different stages. In *Saccharomyces cerevisiae*, the execution of both checkpoint responses requires the Mec1 and Rad53 proteins. This observation led to the suggestion that these checkpoint responses are mediated through a common signal transduction pathway. However, because the checkpoint-induced arrests occur at different cell cycle stages, the downstream effectors mediating these arrests are likely to be distinct. We have previously shown that the *S. cerevisiae* protein Pds1p is an anaphase inhibitor and is essential for cell cycle arrest in mitosis in the presence DNA damage. Herein we show that DNA damage, but not inhibition of DNA replication, induces the phosphorylation of Pds1p. Analyses of Pds1p phosphorylation in different checkpoint mutants reveal that in the presence of DNA damage, Pds1p is phosphorylated in a Mec1p- and Rad9p-dependent but Rad53p-independent manner. Our data place Pds1p and Rad53p on parallel branches of the DNA damage checkpoint pathway. We suggest that Pds1p is a downstream target of the DNA damage checkpoint pathway and that it is involved in implementing the DNA damage checkpoint arrest specifically in mitosis.

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Inter-basin dynamics on multidimensional potential surfaces. I. Escape rates on complex basin surfaces

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(Received 23 March 2001; accepted 17 August 2001)

In this report, we present a general prescription for computing the escape rate of the system from a basin with full consideration of the topographical fingerprint of that basin. The method is based on a solution of the reduced Fokker–Planck equation and built up to allow the separation of the inter-basin dynamics from that of the intra-basin motion. The main result is that when local well populations thermalize within a basin, local minima, especially those of higher energy, enhance the escape rate from the basin. Also, numerical analyses lead to the inference that kinetic traps of "wrong" structures are distinctive topographical patterns which may produce kinetic properties similar to those of the primary basin, i.e., that containing the global minimum, but lie in other basins. *©2001 American Institute of Physics.*

DOI: 10.1063/1.1409955
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Properties, Dynamics, and Electronic Structure of Atoms and Molecules

Many-dimensional potential surfaces: What they imply and how to think about them

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Abstract

Starting with knowledge of the internal energy of a polyatomic system as a multidimensional function of the coordinates of the component atoms - the effective potential surface, one can explore the topography of this surface to find its stationary points and topology. Clusters are particularly effective vehicles for developing the methods of doing this, although it is essentially as easy to study small molecules as it is clusters, if the corresponding surfaces are already known. If the system is small enough, all the minima, the relevant saddles, and the corresponding reaction paths can be found; if the system is larger, then only statistical sampling methods can be applied. Such explorations can be used as efficient ways to test the physical plausibility of potential surfaces, e.g., to determine whether a surface developed to describe spectra is valid enough globally to be used for scattering studies. With the readily manageable potentials such as that composed of the sum of pairwise Morse interactions, it is now straightforward to explore how the form of the basic pair interactions affects the multidimensional topography of the surface. For systems of many particles, it is beginning to seem feasible to infer from topographical properties of the surface the extent to which a system undergoing cooling is either glass-forming or "focusing," in the sense of going to a single structure or a small set of related structures. © 1996 John Wiley & Sons, Inc.

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  - Collaborative environment for new developments

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The hydrologic cycle in deep-time climate problems

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Hydrology refers to the whole panoply of effects the water molecule has on climate and on the land surface during its journey there and back again between ocean and atmosphere. On its way, it is cycled through vapour, cloud water, snow, sea ice and glacier ice, as well as acting as a catalyst for silicate–carbonate weathering reactions governing atmospheric carbon dioxide. Because carbon dioxide affects the hydrologic cycle through temperature, climate is a *pas des deux* between carbon dioxide and water, with important guest appearances by surface ice cover.

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- 6900 journals represented (2700 June 2000)
- 2 million DOI resolutions/month (600,000 - 900,000 in December 2001)

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- Expansion of content types
  - conference proceedings and books/reference works
  - enable citation linking and drive traffic to proceedings papers and book chapters.
- Parameter Passing
  - Extra information sent along with a DOI to:
    - (1) track originating journal (2) customize response pages (3) add return buttons, (4) institute special trading rules
  - OpenURL format being used for parameters
  - http://dx.doi.org/resolve?<OpenURL parameters>

DOIs and OpenURL

- OpenURL is not an alternative to CrossRef and DOIs – they work together
- The DOI system and CrossRef are OpenURL aware and therefore publishers are OpenURL through use of CrossRef and DOIs.
- CrossRef and the DOI system are OpenURL – and so are publishers who use DOIs
- DOIs and CrossRef are integrated with localized linking/OpenURL linking systems (SFX, LinkFinderPlus, Z Portal)

Trends and Developments

- Digitization of older articles
- Users expect things to be instantaneous/real-time
  - Publishing workflows must change
  - “hourly” publishing model
- The Article Economy
  - Journal issue deconstruction is accelerating
  - Users expect easy access - pay-per-view more common
  - Article-by-article online publishing (volumes, issues and print follow later)
  - E-article is article “of record”

Conclusion

- Collaboration and standards are necessary to meet user demands
- The IDF has done an immense amount of work to build a very open, flexible system that builds off the Handle system
- Join the IDF – it's not just for publishers

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